

ABSTRACT

HIGH-RATE QUANTUM KEY DISTRIBUTION SCHEME RELYING ON CONTINUOUSLY PHASE AND AMPLITUDE-MODULATED COHERENT LIGHT PULSES

One aspect of the present invention is related to a quantum cryptographic scheme comprising at least one sending unit including a physical means of encoding and distributing a raw key in the quadrature components of quantum coherent states that are continuously modulated in phase and amplitude, at least one receiving unit containing a physical means of performing homodyne detection of the quantum coherent states in order to measure the quadrature components of the states, a quantum channel for connecting the sending unit to the receiving unit, a two-way authenticated public channel for transmitting non-secret messages between the sending unit and the receiving unit, a quantum key distribution protocol ensuring that the information tapped by a potential eavesdropper can be estimated from the quantum channel parameters, and a direct or reverse reconciliation protocol that converts the raw continuous data into a common binary key.